

# New records and distribution extension of *Nassarius karinae* Usticke, 1971 (Mollusca: Gastropoda: Nassariidae) in the SW Atlantic

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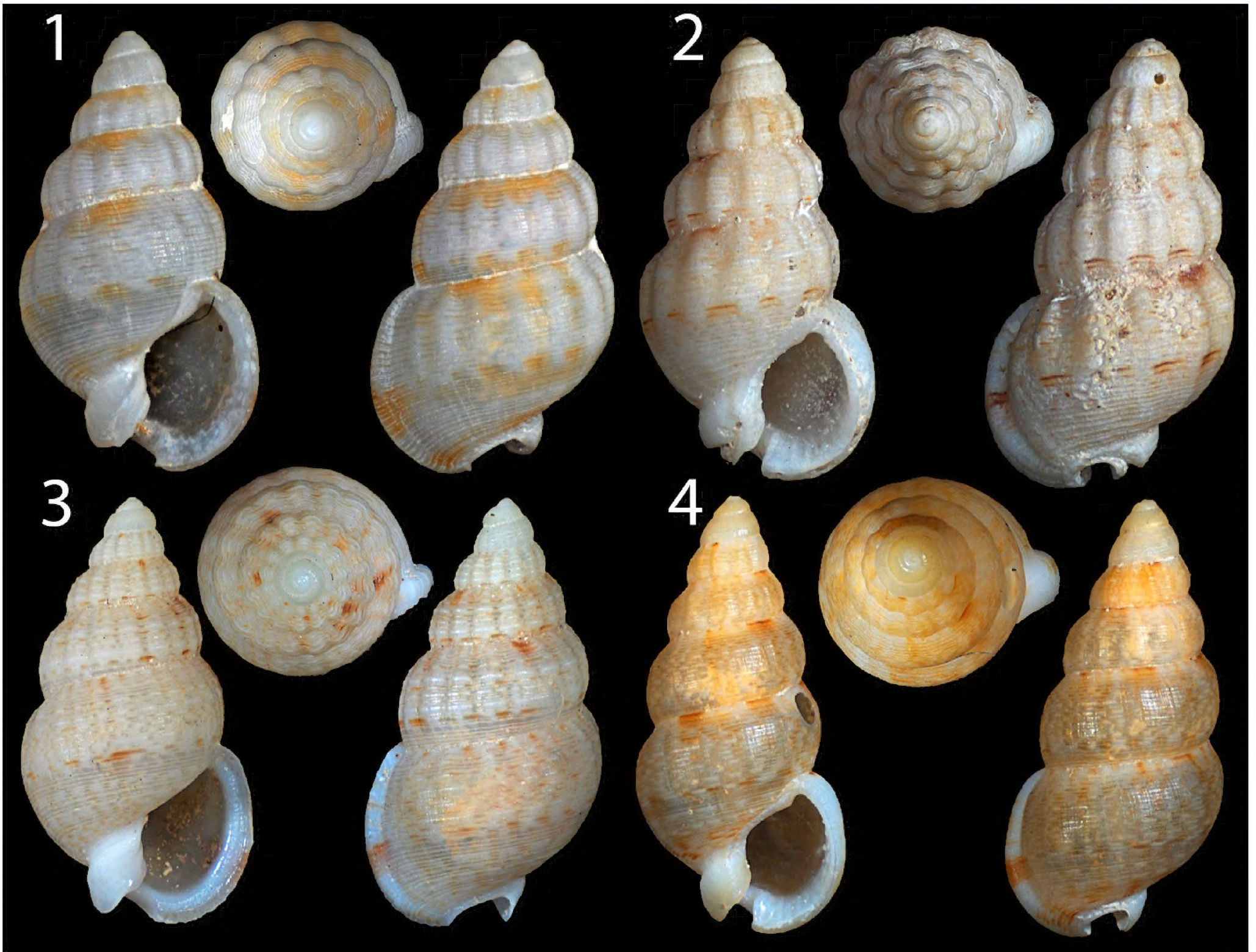
**ABSTRACT:** We report two new records of *Nassarius karinae* Usticke, 1971, from Minerva Seamount and Abrolhos Archipelago, off northeastern Brazil. The new records extend the known geographic range of the species *ca.* 1000 km southward from Pernambuco to Bahia. These are also the first records of the species in Bahia. Additional notes on shell morphology and comparisons with other congeners are provided herein.

Nassariids are widely distributed estuarine to shallow water marine snails, commonly inhabiting soft, muddy bottoms in tropical and temperate latitudes; they are herbivores, carnivores and scavengers (Brown 1982; Morton and Chan 1997; Harasewych 1998). A typical nassariid shell is small to medium-sized (from 4 to 75 mm), ovate to fusiform and high-spired, with a distinct dorsally reflected siphonal notch and lirate outer lip (Abbott 1974; Harasewych 1998). The family Nassariidae comprises hundreds of species divided into 18 extant genera, four of which – *Buccinanops*, *Dorsanum*, *Ilyanassa* and *Nassarius* – are currently represented in the Western Atlantic. To date, 10 species of *Nassarius*, the largest genus in the family, have been recorded in Brazilian waters (Abbate and Cavallari 2013; Appeltans *et al.* 2012).

*Nassarius karinae* Usticke, 1971 is an uncommon species known to occur in the Western Atlantic. Diagnostic characters are a small shell for the genus (*ca.* 10 mm or less); teleoconch with 4-5 inflated whorls; a large, inflated protoconch; sculpture consisting of large, rounded axial ribs crossed by less conspicuous, delicate, evenly spaced spiral cords; color white to orange with a faded darker peripheral band (Usticke 1971). Originally described from St. Croix (Usticke 1959; Usticke 1971), it has since been recorded from the central and southern Caribbean (Puerto Rico, U.S. Virgin Islands, Aruba, Bonaire and Curaçao Islands) to northeastern Brazil (from Pará to Pernambuco) (Faber 2004; Rios 2009; Rosenberg 2009). In August 2012, five empty shells identified as *N. karinae* were collected by dredging at Minerva Seamount, off Bahia state, Brazil (17°06' S, 37°38' W), at a depth of 120 m. Seven months later, surveys conducted at Abrolhos Archipelago revealed yet another empty specimen, collected manually by diving on 2 February 2013, at Siriba Island (17°58'12.7" S, 38°42'33.7" W), at depths of 7-8 m. Permits were granted by ICMBio (SISBIO 10560-1; SISBIO 35995-2). All specimens are held at the Museu de Zoologia da Universidade de São Paulo (MZUSP) malacological collection, cataloged as MZSP 110917, MZSP 111004 (Minerva) and MZSP

111467 (Abrolhos). The new records extend the range of the species *ca.* 1000 km southward, from off Pernambuco state (08° S) to Abrolhos Archipelago, off southern Bahia state. The new records are also the first records of the species from Bahia; they represent important findings since at least one of them is from Abrolhos Marine National Park, a protected area, which allows for better planning of biodiversity management policies.

The specimens from Minerva Seamount bring new information on the conchological variability of *Nassarius karinae*. Shells collected in the very same place vary considerably in color, outline and sculpture. Outlines vary from slender, elongated (Figure 4), more closely resembling the figure in the original description by Usticke (1971, figure 806), to ellipsoid and bulging (Figures 1, 3), with intermediary shapes (Figure 2). Shell ground color varies from white (Figure 2) to yellowish-orange (Figure 4), which is within the normal range of the species (Usticke 1971). The degree of spacing between axial ribs is very variable, from strong and widely spaced (Figures 1, 2) to thinner and more closely spaced (Figure 3). Moreover, the axial sculpture is present on the first teleoconch whorl but may gradually become obsolete on subsequent whorls; the ribs are usually restricted to the earliest whorls (Figures 3, 4), but may continue to the last few whorls in some specimens (Figures 1, 2). In that regard, one of our specimens (Figure 2) bears close resemblance to the specimen figured by Usticke (1971). The spiral sculpture is thin and evenly spaced, which is congruent with the original description (Usticke 1971). The siphonal canal is short, but its width is variable from very narrow (Figure 2) to moderately wide (Figures 1, 3). The protoconch has a relatively small nucleus, and the number of protoconch whorls ranges from 2 to 2½ in our specimens using Pilsbry's (1939) method of whorl-counting; protoconch-teleoconch transition is visible as a subtle change in sculpture. There are previous statements that the smaller number of nuclear whorls (exactly 1½) is useful in distinguishing *N. karinae* from its congeners, such as *Nassarius albus* (Say,



**FIGURES 1-4.** *Nassarius karinae* (Minerva Seamount, off Bahia state, Brazil, 17°06' S, 37°38' W; MZSP 110917) conchological variation. 1. Length = 8.4 mm, width = 4.3 mm; 2. Length = 8.7 mm, width = 4.5 mm; 3. Length = 8.6 mm, width = 4.5 mm; 4. Length = 10.8 mm, width = 5.3 mm.

1826) (which is reported as having 2 nuclear whorls by Usticke (1971) and Faber (2004), though Rios (2009) mentions 1½ nuclear whorls); however, most authors did not stipulate the whorl-counting method, which could lead to inconsistent whorl numbers (e.g., Pilsbry's (1939) versus Verduin's (1977)). The minute shell size, the spiral sculpture with evenly spaced thin lines throughout the teleoconch, protoconch outline and the presence of a faint (often interrupted) brownish spiral band are invariable features in all specimens, and compare fittingly with the original description.

The assemblage of specimens studied herein allows for a more precise comparison between *Nassarius karinae* and congeners occurring in the same area. *Nassarius karinae* differs by having a minute size, a bulbous, smooth protoconch, by bearing more delicate, evenly spaced spiral lines on all teleoconch whorls, and having fewer whorls. Additionally, it differs from *N. albus* by being more elongate; it differs from *N. vibex* (Say, 1822) by being more elongate with deeper sutures, with a much less developed parietal shield, and lacking nodules; from *N. scissuratus* (Dall, 1889) by lacking nodules, having a more weakly bent canal. It can be distinguished from *N. pernitidus* (Dall, 1889) by its more evident axial and spiral sculpture and the absence of nodules. Mean measurements (in mm, n = 6): Length =  $9.13 \pm 0.87$  (min 8.2, max 10.8); Width =  $4.6 \pm 0.41$  (min 3.9, max 5.3).

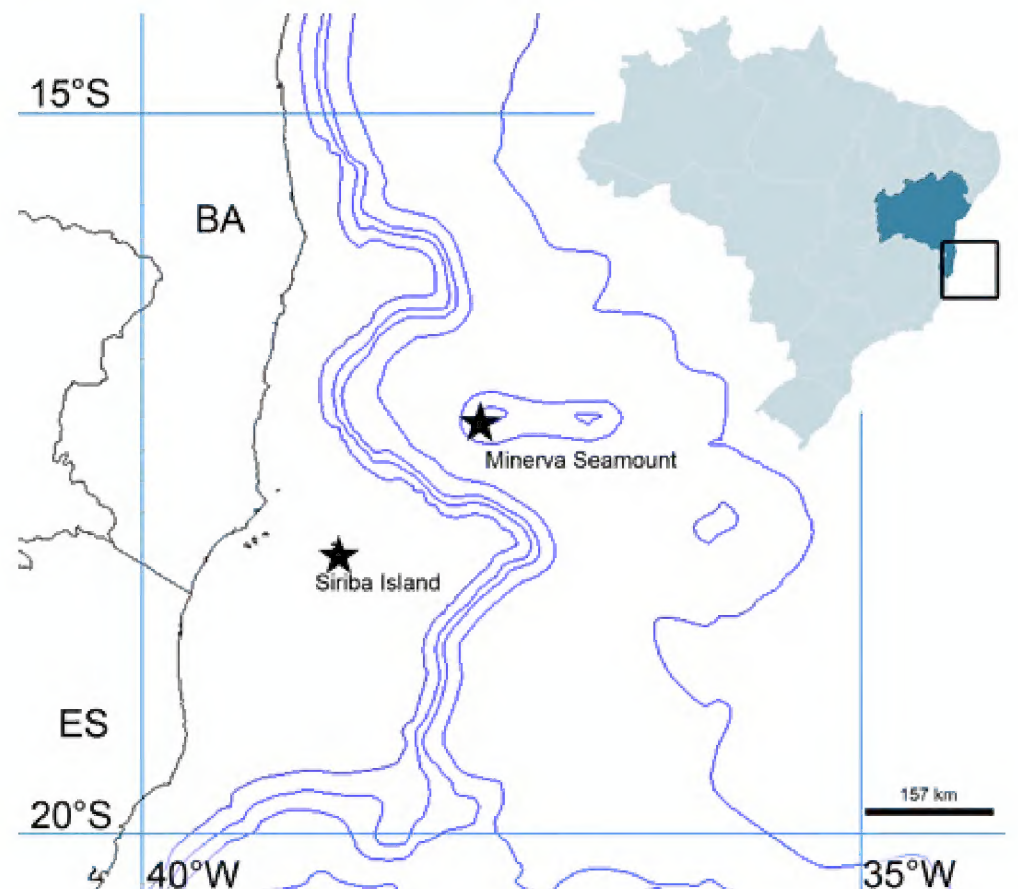


**FIGURE 5.** Locations of the new records. BA – Bahia state, ES – Espírito Santo state.

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## LITERATURE CITED

- Abbate, D. and D. Cavallari. 2013. A new species of *Nassarius* (Gastropoda, Nassariidae) from Canopus Bank, off Northeast Brazil. *Papéis Avulsos de Zoologia* 53(1): 1-4.
- Abbott, R.T. 1974. *American Seashells*, 2<sup>nd</sup> ed. New York: Van Nostrand. 663 p.
- Appeltans, W., P. Bouchet, G.A. Boxshall, K. Fauchald, D.P. Gordon, B.W. Hoeksema, G.C.B. Poore, R.W.M. van Soest, S. Stöhr, T.C. Walter and M.J. Costello (ed.). 2012. *World Register of Marine Species*. Electronic database accessible at: <http://www.marinespecies.org>. Captured on 01 March 2013.
- Brown, A.C. 1982. The biology of sandy-beach whelks of the genus *Bullia* (Nassariidae). *Annual Review of Oceanography and Marine Biology* 20: 309-361.
- Faber, M. J. 2004. Marine gastropods from the ABC Islands and other localities 2. The family Nassariidae (Gastropoda: Buccinoidea). *Miscellanea Malacologica* 1(1): 7-15.
- Harasewych, M.G. 1998. Infraorder Neogastropoda, Family Nassariidae; p. 819-845 In Beesley, L.P., G.J.B. Ross and A. Wells (ed.). *Mollusca: the Southern Synthesis*. Part B. Melbourne: CSIRO Publishing.
- Morton, B. and K. Chan. 1997. First report of shell boring predation by a member of the Nassariidae (Gastropoda). *Journal of Molluscan Studies* 63(3): 476-478.
- Pilsbry, H.A. 1939. Land Mollusca of North America (north of Mexico). Volume 1, Part 1. *The Academy of Natural Sciences of Philadelphia, Monograph* 3: xvii + 573 + ix p.
- Rios, E.C. 2009. *Compendium of Brazilian Sea Shells*. Rio Grande: Evangraf. 668 p.
- Rosenberg, G. 2009. *Malacolog 4.1.1: A Database of Western Atlantic Marine Mollusca*. Electronic database accessible at: <http://www.malacolog.org.org>. Captured on 01 March 2013.
- Usticke, G.W. 1959. *A Check List of Marine Shells of St. Croix*. St. Croix: privately published. vi + 90 p.
- Usticke, G.W. 1971. *A Supplementary Listing of New Shells, revised edition*. St. Croix: privately published. 32 p.
- Verduin, A. 1977. On a remarkable dimorphism of the apices of sympatric closely-related marine gastropod species. *Basteria* 41(5-6): 91-95.

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